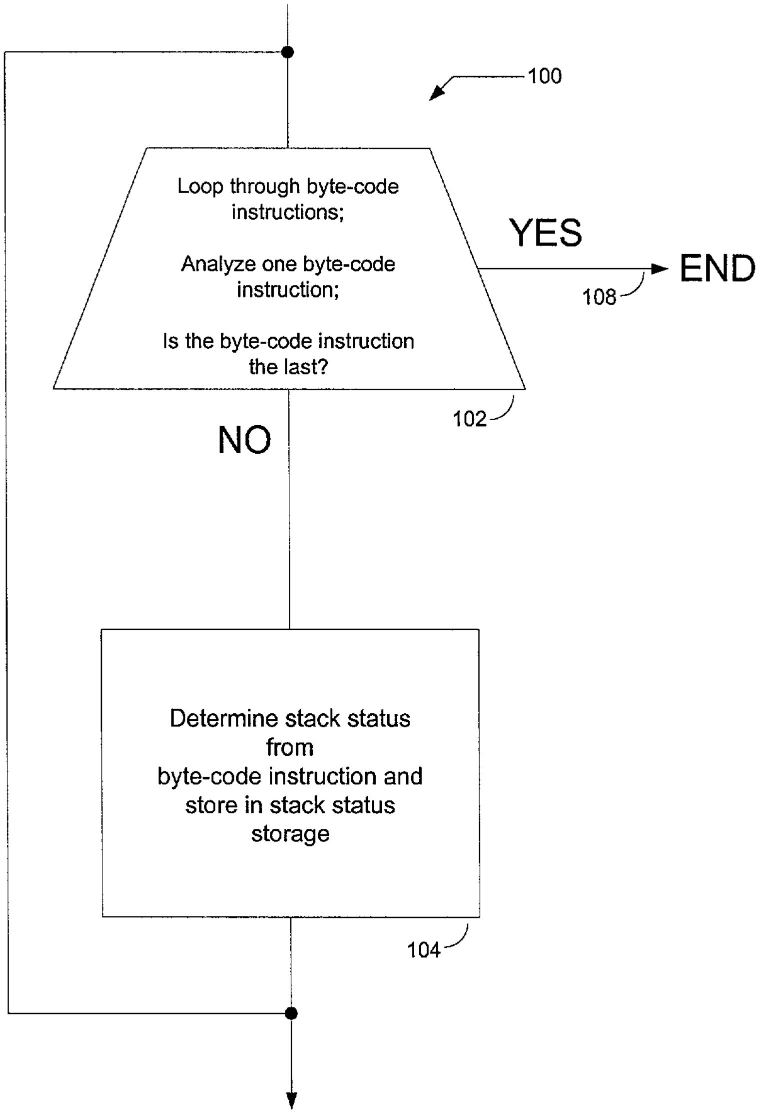
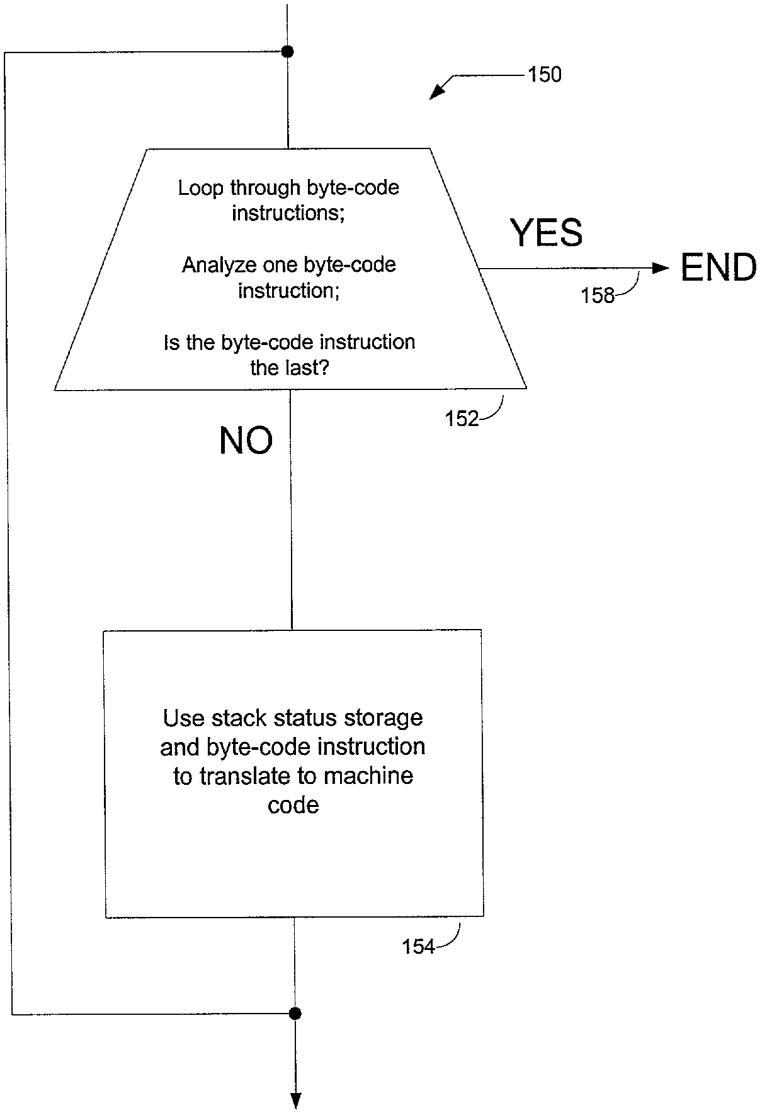


Traditional Byte-Code Compilation

Pass 1

FIGURE 1A

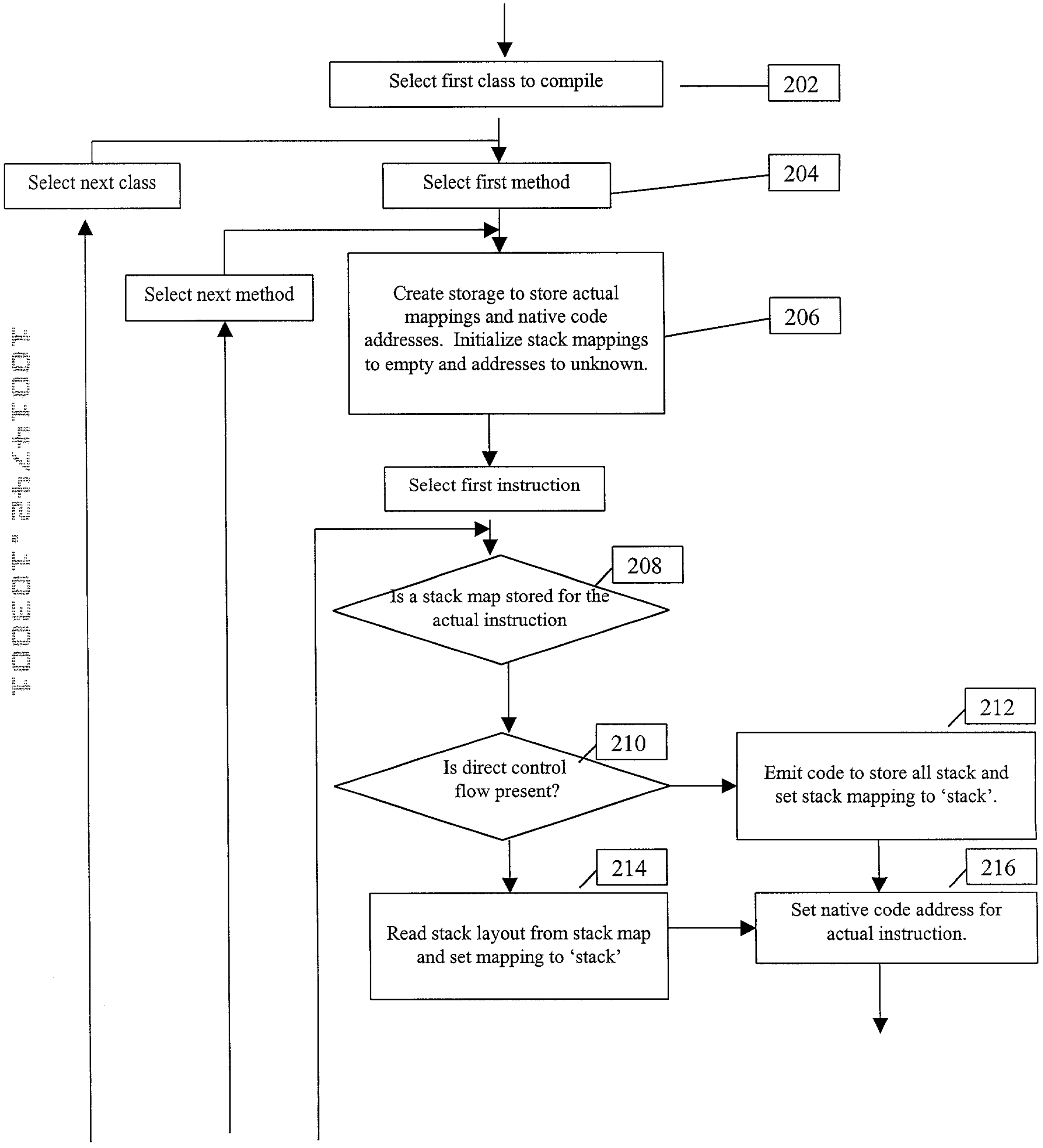


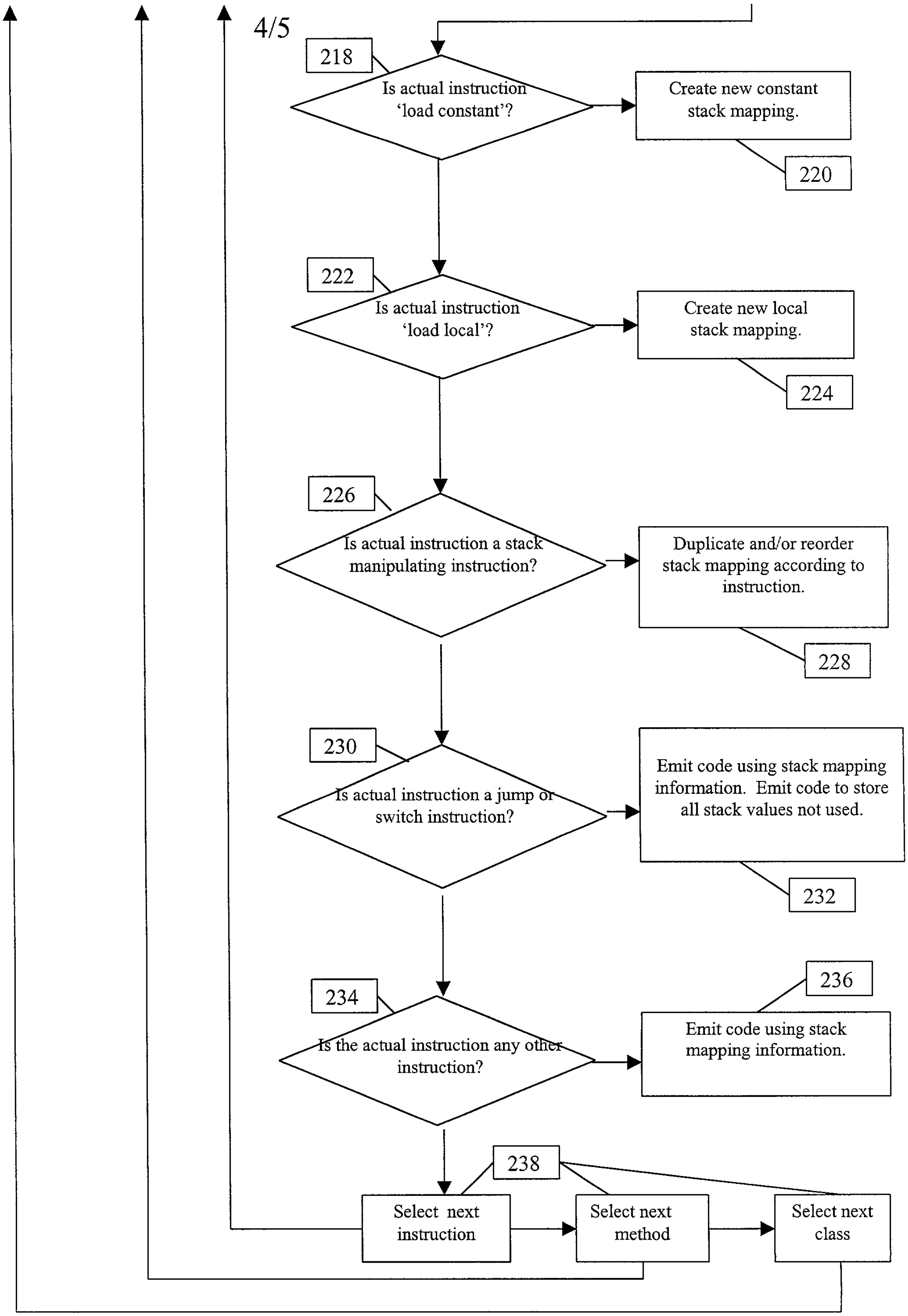
Traditional Byte-Code Compilation

Pass 2

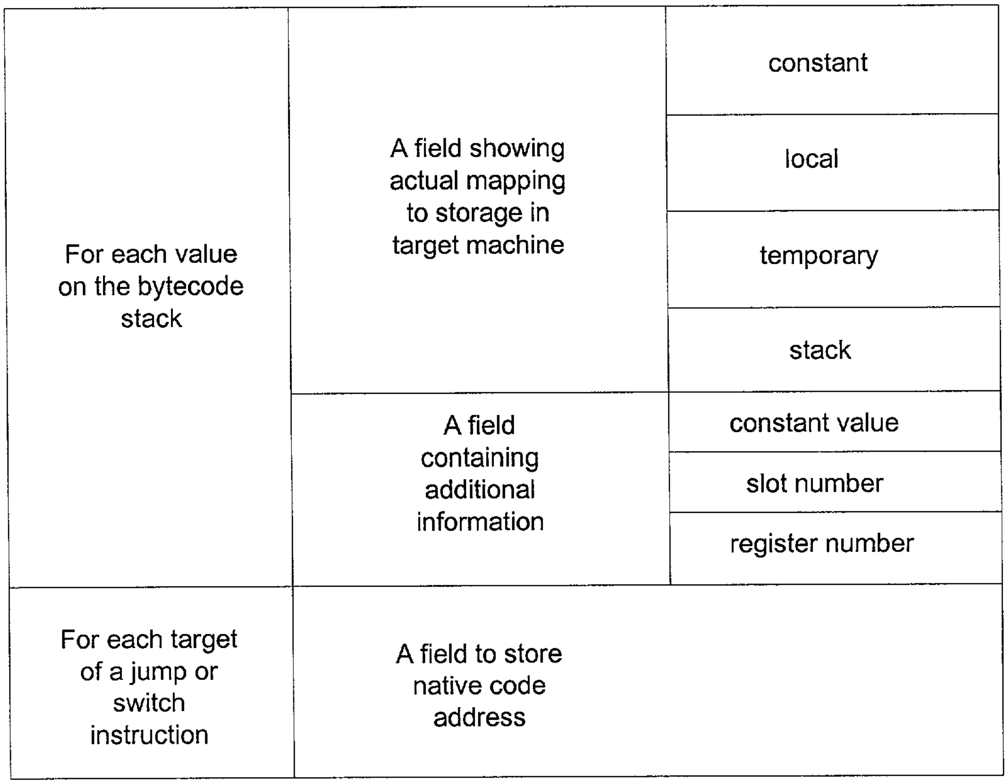
FIGURE 1B

FIGURE 2


Select first class to compile
202
Select next class
Select first method
204
Select next method
Create storage to store actual mappings and native code addresses. Initialize stack mappings to empty and addresses to unknown.
206
Select first instruction
208
Is a stack map stored for the actual instruction
210
Is direct control flow present?
212
Emit code to store all stack and set stack mapping to 'stack'.
214
Read stack layout from stack map and set mapping to 'stack'
216
Set native code address for actual instruction.


218
Is actual instruction 'load constant'?
Create new constant stack mapping.
220
222
Is actual instruction 'load local'?
Create new local stack mapping.
224
226
Is actual instruction a stack manipulating instruction?
Duplicate and/or reorder stack mapping according to instruction.
228
230
Is actual instruction a jump or switch instruction?
Emit code using stack mapping information. Emit code to store all stack values not used.
232
234
Is the actual instruction any other instruction?
236
Emit code using stack mapping information.
238
Select next instruction
Select next method
Select next class

Arrays of Fixed Size



Required Data Structures

FIGURE 3